DISCIPLINE-BASED FACULTIES & WORKING GROUPS

Molecular Epidemiology Faculty

Mission

The Molecular Epidemiology Faculty, previously called the Epidemiology and Carcinogenesis Faculty, brings together NCI scientists committed to research on the causes of cancer in human populations. The Faculty promotes and facilitates basic, clinical, and epidemiologic research by applying expertise in molecular biology, biochemistry, genomics, carcinogenesis, epidemiology, and biostatistics to laboratory and population studies. As a forum for the exchange of ideas, the Faculty can foster research that may not have been possible through individual labs or branches.

The scope of the Faculty's research has been broad. Laboratory research focuses on carefully controlled experimental models, including *in vitro* and *in vivo* systems, to understand the mechanisms of cancer development. Epidemiologic research takes place in human populations, including groups of special interest because of elevated or increasing cancer rates, unusual exposures, or record-linkage systems that provide exceptional opportunities for etiologic studies. Both approaches investigate genetic predisposition, environmental and occupational exposures, lifestyle and nutritional factors, radiation, and infectious agents. Increasingly, advances have taken place at the borders of laboratory, clinical, and population research in an interdisciplinary approach called molecular epidemiology.

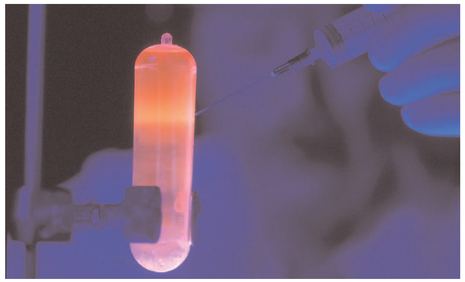
Revitalization

The Molecular Epidemiology Faculty is currently in the process of reorganizing and focusing. A new steering committee is being established. Membership in the Faculty may be expanded to include staff scientists and clinicians, research and clinical fellows, SAIC investigators, and possibly others. New objectives and programs will be developed. If you wish to join the Faculty, go to http://ccr.cancer.gov/research/faculties_index.asp. If you are interested in serving on the steering committee, email Regina Ziegler at zieglerr@mail.nih.gov.

NATIONAL CANCER INSTITUTE®

DCEG/CCR Molecular Epidemiology Center of Excellence

The Molecular Epidemiology Faculty will contribute to the Molecular Epidemiology Center of Excellence at NCI by enhancing communication, collaboration, and creativity. This initiative will capitalize upon the concentration of cancer epidemiologists and biologists at NCI, form multidisciplinary research teams to address key questions in cancer etiology, and thereby shape the development of new preventive and diagnostic strategies. The unique position of this Center within the federal government will allow it to carry out complex multidisciplinary research initiatives, forge national and international collaborations, and conduct cooperative research efforts with other government agencies as well as the extramural scientific community. Special emphasis will be placed on integrating molecular, biochemical, genomic, and other emerging technologies into large-scale population studies in an effort to identify genetic and environmental determinants of cancer induction and progression and to uncover gene-environment interactions, precursor states, and mechanisms of carcinogenesis.



STRATEGIC PARTNERSHIPS LINKING INTRAMURAL AND EXTRAMURAL SCIENTISTS

- Cohort Consortium
- Case-control Consortia
- Familial Cancer Consortia

DEVELOPMENT OF METHODS AND RESOURCES

- Epidemiologic Tools
  - http://www.dceg.cancer.gov/tools.html
- Core Genotyping Facility
  - http://cgf.nci.nih.gov/home.cfm
  - Provides high-throughput genotyping and DNA sequencing.
  - SNP 500Cancer: Generates resources for the identification and characterization of genetic variation important in cancer.
  - Genewindow
    A new tool for visualizing genomic variation.
    http://genewindow.nci.nih.gov/about.jsp
- SAIC Research Technology Program and Core Support
  - Develop new techniques for viral, immunologic, and hormonal assays.
  - State-of-the-art facility for specimen processing and storage.

DCEG/CCR Human Molecular Pathology Working Group

STEPHEN HEWITT, CCR; MARK RAFFELD, CCR; MARK SHERMAN, DCEG

Human molecular pathology is important for understanding the etiology of cancer, defining intermediate endpoints, clarifying the natural history of precursors, and identifying new screening and chemopreventive approaches. Optimal collection, preparation, and analysis of tissues and the interpretation of data from large population-based studies present imposing challenges, yet offer immense opportunities. Developing synergistic technologies for the Intramural Research Program, including tissue microarrays, immunohistochemistry, and *in situ* hybridization, should result in rapid, direct detection of molecules of interest with sufficient reliability and efficiency to support the needs of large population studies. The Human Molecular Pathology Working Group, originally established by the Epidemiology and Carcinogenesis Faculty, has identified a need for core

infrastructure to meet the growing demand for tissue microarrays in molecular epidemiologic studies and to provide quality assurance, batch testing, and rapid turnaround. This Working Group, in collaboration with the directors of CCR and DCEG, is evaluating ways to support a molecular pathology facility for large population-based studies.

Faculty Members

Regina Ziegler, Chair

2004 STEERING COMMITTEE

J. Carl Barrett
L. Michelle Bennett
Aaron Blair
Michael Dean
Joseph Fraumeni
Curtis Harris
Patricia Hartge
Robert Hoover
Stephen Hursting
Brian Johnson
Geoffrey Kidd
Ilona Linnoila
Catherine McClave
Katherine McGlynn
Michael Potter
Nathaniel Rothman
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